

WE CLAIM:

1. A method of processing a substrate on a radiantly heated substrate support in a high temperature process chamber comprising:

using a substrate handler to move the substrate into the process chamber to a position above the substrate support;

holding the substrate above the substrate support for a substrate preheat period;

maintaining the substrate support at greater than 900°C during the substrate preheat period; and

putting the substrate on the substrate support at the completion of the substrate preheat period.

2. The method of Claim 1, wherein the substrate has a temperature less than 100°C as it moves into the chamber.

3. The method of Claim 1, wherein the substrate has a temperature less than 50°C as it moves into the chamber.

4. The method of Claim 1, wherein maintaining comprises keeping the substrate support at a processing temperature employed for subsequent processing of the substrate.

5. The method of Claim 4, wherein the processing temperature is greater than 1000°C.

6. The method of Claim 1, wherein the preheat period is longer than 10 seconds.

7. The method of Claim 1, wherein, during the preheat period, the substrate is heated to a temperature of about 200°C or less below the temperature of the substrate support.

8. The method of Claim 1, wherein, during the preheat period, the substrate is heated to a temperature of about 100°C or less below the temperature of the substrate support.

9. The method of Claim 1, wherein during the preheat period, the substrate support and the substrate are heated by means of radiant heating lamps.

10. A method of improving the throughput time of a high temperature substrate processing apparatus comprising:

providing a substrate support within a processing chamber;
providing radiant heating elements spaced above the substrate support;
moving a substrate into the chamber;
positioning the substrate at a location spaced between the radiant heating elements and the substrate support;
preheating the substrate at the location;
maintaining the substrate support at a process temperature while the substrate is preheating; and
depositing the substrate onto the substrate support after preheating.

11. The method of Claim 10, wherein preheating the substrate continues until the temperature of the substrate is within 200°C of the substrate support

12. The method of Claim 10, wherein preheating the substrate continues until the substrate is within 100°C of the substrate support.

13. The method of Claim 10, wherein the process temperature is greater than 900°C.

14. The method of Claim 10, wherein the process temperature is greater than 1000°C.

15. The method of Claim 10, further comprising processing the substrate at the process temperature.

16. The method of Claim 10, further comprising removing the substrate from the substrate support after processing and moving the substrate out of the chamber, while maintaining the substrate support at the process temperature.